

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

O2 MICRO INTERNATIONAL LTD. §
Vs. § CIVIL ACTION NO. 2:04-CV-323
SAMSUNG ELECTRONICS CO., LTD.,
ET AL. §

MEMORANDUM OPINION AND ORDER

The court issues this memorandum opinion and order to resolve the parties' claim construction disputes.

1. Introduction.

In this case, the plaintiff, O2 Micro International Ltd. ("O2 Micro"), sued the defendants, Samsung Electronics Co., Ltd., and various affiliated companies (collectively "Samsung"), for infringement of United States Patent Nos. 6,259,615 ("615 patent"), 6,396,722 ("722 patent"); 6,804,129 ("129 patent"); 6,707,264 ("264 patent"); and 6,501,234 ("234 patent"). The '615, '722, and '129 patents are related and are collectively referred to as the Converter Circuit patents. The '264 and '234 patents are related and are collectively referred to as the Sequential Burst Mode patents. After considering the submissions of the parties, the arguments of counsel, and the pertinent portions of the record, the court is of the opinion that the claims of the patents should be construed as set forth in this opinion.

2. Legal Principles Relevant to Claim Construction.

"A claim in a patent provides the metes and bounds of the right which the patent confers on

the patentee to exclude others from making, using or selling the protected invention.” *Burke, Inc. v. Bruno Indep. Living Aids, Inc.*, 183 F.3d 1334, 1340 (Fed. Cir. 1999). Claim construction is an issue of law for the court to decide. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 970-71 (Fed. Cir. 1995) (en banc), *aff’d*, 517 U.S. 370 (1996).

To ascertain the meaning of claims, the court looks to three primary sources: the claims, the specification, and the prosecution history. *Markman*, 52 F.3d at 979. Under the patent law, the specification must contain a written description of the invention that enables one of ordinary skill in the art to make and use the invention. A patent’s claims must be read in view of the specification, of which they are a part. *Id.* For claim construction purposes, the description may act as a sort of dictionary, which explains the invention and may define terms used in the claims. *Id.* “One purpose for examining the specification is to determine if the patentee has limited the scope of the claims.” *Watts v. XL Sys., Inc.*, 232 F.3d 877, 882 (Fed. Cir. 2000).

Nonetheless, it is the function of the claims, not the specification, to set forth the limits of the patentee’s claims. Otherwise, there would be no need for claims. *SRI Int’l v. Matsushita Elec. Corp.*, 775 F.2d 1107, 1121 (Fed. Cir. 1985) (en banc). The patentee is free to be his own lexicographer, but any special definition given to a word must be clearly set forth in the specification. *Intellicall, Inc. v. Phonometrics*, 952 F.2d 1384, 1388 (Fed. Cir. 1992). And, although the specification may indicate that certain embodiments are preferred, particular embodiments appearing in the specification will not be read into the claims when the claim language is broader than the embodiments. *Electro Med. Sys., S.A. v. Cooper Life Scis., Inc.*, 34 F.3d 1048, 1054 (Fed. Cir. 1994).

This court’s claim construction decision must be informed by the Federal Circuit’s decision

in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005)(en banc). In *Phillips*, the court set forth several guideposts that courts should follow when construing claims. In particular, the court reiterated that “the *claims* of a patent define the invention to which the patentee is entitled the right to exclude.” *Id.* at 1312 (emphasis added) (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). To that end, the words used in a claim are generally given their ordinary and customary meaning. *Id.* The ordinary and customary meaning of a claim term “is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e. as of the effective filing date of the patent application.” *Id.* at 1313. This principle of patent law flows naturally from the recognition that inventors are usually persons who are skilled in the field of the invention. The patent is addressed to, and intended to be read by, others skilled in the particular art. *Id.*

The primacy of claim terms notwithstanding, *Phillips* made clear that “the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification.” *Id.* Although the claims themselves may provide guidance as to the meaning of particular terms, those terms are part of “a fully integrated written instrument.” *Id.* at 1315 (quoting *Markman*, 52 F.3d at 978). Thus, *Phillips* emphasized the specification as being the primary basis for construing the claims. *Id.* at 1314-17. As the Supreme Court stated long ago, “in case of doubt or ambiguity it is proper in all cases to refer back to the descriptive portions of the specification to aid in solving the doubt or in ascertaining the true intent and meaning of the language employed in the claims.” *Bates v. Coe*, 98 U.S. 31, 38 (1878). In addressing the role of the specification, the *Phillips* court quoted with approval its earlier observations from *Renishaw PLC v. Marposs Societa’ per Azioni*,

158 F.3d 1243, 1250 (Fed. Cir. 1998):

Ultimately, the interpretation to be given a term can only be determined and confirmed with a full understanding of what the inventors actually invented and intended to envelop with the claim. The construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction.

Consequently, *Phillips* emphasized the important role the specification plays in the claim construction process.

The prosecution history also continues to play an important role in claim interpretation. The prosecution history helps demonstrate how the inventor and the PTO understood the patent. *Phillips*, 415 F.3d at 1317. Because the file history, however, “represents an ongoing negotiation between the PTO and the applicant,” it may lack the clarity of the specification and thus be less useful in claim construction proceedings. *Id.* Nevertheless, the prosecution history is intrinsic evidence. That evidence is relevant to the determination of how the inventor understood the invention and whether the inventor limited the invention during prosecution by narrowing the scope of the claims.

Phillips rejected any claim construction approach that sacrificed the intrinsic record in favor of extrinsic evidence, such as dictionary definitions or expert testimony. The *en banc* court condemned the suggestion made by *Tex. Digital Sys., Inc. v. Telegenix, Inc.*, 308 F.3d 1193 (Fed. Cir. 2002), that a court should discern the ordinary meaning of the claim terms (through dictionaries or otherwise) before resorting to the specification for certain limited purposes. *Id.* at 1319-24. The approach suggested by *Tex. Digital*—the assignment of a limited role to the specification—was rejected as inconsistent with decisions holding the specification to be the best guide to the meaning of a disputed term. *Id.* at 1320-21. According to *Phillips*, reliance on dictionary definitions at the expense of the specification had the effect of “focus[ing] the inquiry on the abstract meaning of

words rather than on the meaning of the claim terms within the context of the patent.” *Id.* at 1321. *Phillips* emphasized that the patent system is based on the proposition that the claims cover only the invented subject matter. *Id.* What is described in the claims flows from the statutory requirement imposed on the patentee to describe and particularly claim what he or she has invented. *Id.* The definitions found in dictionaries, however, often flow from the editors’ objective of assembling all of the possible definitions of a word. *Id.* at 1321-22.

Phillips does not preclude all uses of dictionaries in claim construction proceedings. Instead, the court assigned dictionaries a role subordinate to the intrinsic record. In doing so, the court emphasized that claim construction issues are not resolved by any magic formula. The court did not impose any particular sequence of steps for a court to follow when it considers disputed claim language. *Id.* at 1323-25. Rather, *Phillips* held that a court must attach the appropriate weight to the intrinsic sources offered in support of a proposed claim construction, bearing in mind the general rule that the claims measure the scope of the patent grant. The court now turns to a discussion of the claim construction disputes.

3. Discussion.

A. Converter Circuit patents.

The court has previously construed most of the terms raised with respect to these three patents. By way of background, Judge Claudia Wilken construed the ‘615 patent in a California litigation involving O2 Micro and Monolithic Power Systems (“MPS”). This court construed the ‘615 and the ‘722 in the Sumida case and in the Bitek case. *See O2 Micro International Ltd. v. Taiwan Sumida*, 2:03-CV-07 and *O2 Micro International Ltd. v. Beyond Innovation Technology*, 2:04-cv32. In doing so, the court placed heavy reliance on Judge Wilken’s constructions of the ‘615

patent.

1. Open lamp condition.

Several claims of the '129 patent include the term "open lamp condition."¹ Samsung seeks a construction of "open lamp" to mean "a situation in which the lamp is not connected to the converter." O2 suggests that the term needs no construction, but should be given its ordinary meaning. In any event, O2 contends that an "open lamp condition" is broader than Samsung proposes and includes situations where the lamp has failed or is broken.

The court holds that one of ordinary skill in the art, reading the claim language in light of the specification, would apply Samsung's definition. Various claims of the '129 patent use the term "open lamp condition." Still others use the term "short circuit condition." *Compare* '129 patent, claims 21 and 22. Although the specification is somewhat ambiguous, it appears to use the term "open lamp condition" to refer to the condition in which the CCFL lamp has been removed or is not connected to the converter. Column 9 of the '129 patent describes a time-out sequence designed to shut off the circuit in the case of an open lamp condition. The relevant passage states:

Drive pulses are disabled once the time-out is reached, thus providing safe-operation of the converter circuit. That is, circuit 60 provides a sufficient voltage to ignite the lamp, but will shut off after a certain period if the lamp *is not connected to the converter*, so that erroneous high voltage is avoided at the output. This duration is necessary since a non-ignited lamp is similar to an open-lamp condition.

'129 patent, col. 9, ll. 8-15. Read in light of this passage of the specification, the term "open lamp condition" means "a condition in which the lamp is not connected to the converter."

¹ For example, claim 13 claims "a circuit as claimed in claim 1, wherein said predetermined range indicates an open lamp condition."

2. A transformer having a primary side and a secondary side.

At the hearing, O2 offered a compromise construction of this term and Samsung accepted it. The court adopts that construction and defines this term to mean “a device, which when used, will raise or lower an incoming voltage, having a side receiving the incoming voltage, and a side outputting the raised or lowered voltage.”

3. A plurality of outputs.

The court is persuaded by O2's arguments that this term needs no construction and that Samsung's proposed construction is, in any event, overly restrictive.

4. Liquid crystal display unit/liquid crystal screen.

The fourth and fifth terms involve LCD units and screens, respectively. Again, the parties are in agreement as to these terms and the court defines “liquid crystal display unit” to mean “a device including a display made of material whose reflectance or transmittance changes when an electrical field is applied to it.” The court defines liquid crystal screen to mean a “screen of material whose reflectance or transmittance changes when an electrical field is applied to it.”

5. Predetermined.

The court has previously construed this term to mean “determined beforehand.” Samsung challenges that construction, and urges the court to alter the definition in this case. Samsung relies on the Federal Circuit's intervening decision in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005)(en banc) as support for its effort to further “develop” this construction. Samsung also points to the Federal Circuit's more recent decision in *Curtiss-Wright Flow Control Corp. v. Velan, Inc.*, No. 05-1373 (Fed. Cir. Feb. 15, 2006) as an illustration of the principle that a broad, ordinary meaning should give way to a narrower one required by the specification. Samsung asks the court

to define “predetermined” as “determined before the operation of the device.” In response, O2 points to passages in the specification that a certain reference value can be “programmable and/or user-definable.” O2 points to these passages to argue that, in the context of these inventions, a threshold or reference could be “predetermined” during operation of the device.

The court has considered the authority cited by Samsung as well as the relevant portions of the specification. Despite Samsung’s arguments to the contrary, the court maintains its prior construction of predetermined.

6. Only if.

In prior cases, the court has not defined the term “only if.” Samsung contends that the court should adopt a construction for the term in this case to mean “at no time other than when.” The court rejects this construction and remains persuaded that this term needs no construction and will be understood by a jury.

7. First state and second state.

Samsung contends that the court should define the terms “first state” and “second state” to mean modes of operation. In other words, an accused device would operate in a “first state” or “first mode of operation” and a “second state” or “second mode of operation.” Samsung argues that O2, in the case against MPS, suggested a similar construction. In particular, Judge Wilken’s order reflects O2’s argument that “conduction state” should be construed with reference to the ordinary usage of “state.” O2 contended that the ordinary usage of “state” was the “mode or condition of something.” Moreover, O2 sponsors a similar definition in this case. *See* O2’s Amended Opening Claim Construction Brief, at 28 (“Rather, ‘conduction state’ means ‘the mode of a switch, either on or off.’”). This court agrees that the ordinary usage of state means the “mode or condition” of

something and as such defines a “state” for purposes of this case to mean “a mode or condition.” The term “first state” means “first mode or condition” and the term “second state” means “second mode or condition.”

8. Feedback and feedback signal.

The defendants ask the court to limit the terms “feedback” and “feedback signal” to signals that can be used to determine current through the load. The court rejects this position. Although Samsung correctly contends that certain claim limitations add language that further describes the feedback signal, the terms, standing alone, are not limited to feedback signals that can be used to determine current through the load. Instead, as O2 correctly observes, the term “feedback signal” simply connotes a signal that is indicative of feedback.

B. Sequential Burst Mode patents.

The second group of patents are referred to as the “Sequential Burst Mode patents.” These patents are related, as the ‘264 patent is a continuation of the ‘234 patent. The technology is used to regulate the power delivered to a plurality of fluorescent lamps that provide backlighting for the LCDs used in laptops, desktop computers, and other electronic products.

The patents provide an overview of the relevant art. A lighting/dimming system is a system used to regulate the amount of power delivered to a lamp and control its brightness. One type of prior art system is a voltage control dimming system. This system varies the input voltage to an inverter to adjust the output voltage. The lower the input voltage, the lower the output voltage to the lamp. The constraints of such a system include a low dimming range ratio. ‘234 patent, col. 1, ll. 37-39.

A second dimming system described by the prior art is the “burst mode” dimming system.

In a “burst mode dimming system,” an alternating signal is cut with a notch of variable width so as to reduce the power supplied to a lamp to provide a desired dimming. The smaller the widths of the AC power, the lower the luminance at which the lamp operates. *Id.* at ll. 40-45.

The patents-in-suit describe one of the prior art patents in the field. The prior art ‘540 patent uses burst mode techniques to synchronize a single back light with the LCD to reduce flicker problems. In addition, the use of a burst mode system as described in the ‘540 patent reduces the noise associated with the lighting display.

Bearing this background in mind, the Sequential Burst Mode patents describe inventions used to regulate the power delivered to multiple lamps as opposed to a single lamp. In the field of the invention, many larger LCD screens use more than one lamp. The goal of the patents is to regulate the power given to the various lamps to reduce flicker and noise problems. The patents accomplish this by generating a plurality of “burst mode signals,” which are phase shifted so as to sequentially supply power to the plurality of lamps. In this way, the individual lamps are activated sequentially. According to the detailed description of the preferred embodiment, “burst mode, as used herein and as understood in the art, generally means the regulation of power to a load using a PWM signal to modulate the power delivered to a load based on the pulse width of the PWM signal.” ‘234 patent, col. 4, ll. 57-61. The patents describe the invention as a phase delay array that receives a pulse width modulated signal and a frequency selection signal. The array generates a plurality of burst mode signals that are phased in time to regulate power to their respective loads, such that the loads are not on at the same time.

Claim 1 of the ‘234 patent is illustrative. That claim recites:

1. A variable power regulator, comprising:

a pulse width modulator generating a pulse signal having a pulse width;

a phase delay array receiving said pulse signal and a frequency selection signal, and generating a plurality of phase burst signals, each having a frequency determined by said frequency selection signal wherein at least two of said phased burst signals have different start times.

Claim 1 of the '264 patent is also illustrative. That claim recites:

1. A phase load regulation system comprising a phased delay array adapted to generate a plurality of phase-shifted burst mode signals, wherein each said phase shifted burst mode signal regulating power to a respective load.

Bearing in mind the canons of construction, the court will address the disputed claim terms.

1. Phase[d] delay array.

The patent claims require a “phase[d] delay array.” O2 contends that the court should construe this phrase as a whole and define it to mean “a circuit that generates a plurality of phase shifted signals.” O2 argues that the patent uses the phrase (or similar phrases) sixty-six times in the specification. O2 thus argues that the court should define the term by reference to its context in the specification. O2 argues that the inventors implicitly acted as their own lexicographers by using the term phased delay array according to O2's proposed definition. Samsung counters that the term in need of construction is “array.” According to Samsung, an array is a narrower term than a “circuit” as proposed by O2. Samsung points to a dictionary definition of “array” and proposes that the term means “a group of components arranged to provide a desired variation.”

Despite O2's arguments in the briefs, Samsung correctly observes that O2's proposed construction effectively reads the term “array” out of the claims and substitutes the term “circuit” in its place. The claims and the language of the patent use both the terms “circuit” and “array.” Had the inventors desired to use the term “circuit” in the claims, they easily could have done so. Indeed, as Samsung observes, claim 6 of the '264 patent actually used both terms, when it adds the limitation

of “phase array driver circuits.” In light of these issues, the court defines “array” as used in the claim limitation to mean “a group of components arranged to provide a desired variation.” The balance of the phrase needs no construction.

2. Burst mode signals.

The parties dispute the construction of “burst mode signals.” O2 contends this term means “a pulse width modulated signal that regulates bursts of power to the lamp.”² Samsung contends the term means “alternating electrical signals that have been cut with a notch of variable width that controls the amount of power supplied to the lamp.” In support, Samsung points to the background section of the patent, cited above, which states “another technique for dimming a fluorescent lamp is the ‘burst mode’ dimming *system* in which an alternating signal that is supplying power to the lamp is cut with a notch of variable width so as to reduce the power applied to the lamp and thereby provide the desired dimming.” *See* ‘234 patent, Col. 1, ll. 37-41 (emphasis added). Samsung also points to a place in the prosecution history in which the patentee states that “burst mode dimming is a methodology by which power supplied to the lamp is turned on and off corresponding to the oscillation of a burst mode signal.” *See* Amendment A, Response to Official Action mailed June 17, 2003. Samsung points to the word “oscillation” and calls it equivalent to “alternating” as used in the background section of the patent.

The dispute is whether the burst mode signals must be alternating electrical signals cut with a notch. It is true, as Samsung contends, that one portion of the background section states that a burst mode dimming *system* uses alternating signals cut with a notch. Nevertheless, other portions

² O2 has sponsored other, somewhat different, definitions for this term previously in this case.

of the specification suggest a different meaning for the term “burst mode signal.” In particular, the patent explicitly states that “[b]urst mode, *as used herein* and as is understood in the art, generally means regulation of power to a load using a PWM signal to modulate the power delivered to the load based on the pulse width of the PWM signal.” Col. 4, ll. 54-58 (emphasis added). Throughout the specification, moreover, the inventors referred to the burst signals or the phased burst signals as signal 50. As an example, Figure 8 shows that signal 50 is input into the phase array drivers and output as signal 51. The corresponding portion of the specification explains that the phased burst signals are signals 50, not 51. *See* ‘234 patent, col. 8, ll.62-66. (“In an exemplary system, each phase array driver 100 receives *two phased burst signals 50* which are 180° out of phase and generates two power regulating signals 51 which are 180° out of phase.”)(emphasis added). Consequently, after considering the parties’ arguments and the relevant portions of the specification, the court defines “burst mode signals” to mean “low-frequency PWM signals which regulate the power to a load based on the pulse width of the PWM signals.”

3. Phase shifted burst mode signals/phased burst signals/phased burst mode signals.

The court defines these terms to mean “a burst mode signal that is shifted in phase with respect to another burst mode signal.” The court incorporates by reference its definition of burst mode signal.

4. Phrases including the term “phased burst signal.”

Samsung seeks a construction of two other phrases which include this term. These phrases are “generating a plurality of phased burst signals” and “delaying at least one of said phased pulse signals.” O2 contends that “generating” and “delaying” need no construction.

The phrase “generating a plurality of phase burst signals” appears in claim 27 of the ‘234 patent. Samsung seeks a construction of “generating” which means “bringing into existence.” After considering the parties’ arguments, the court adopts that construction.

The phrase “delaying at least one of said phased pulse signals” also appears in claim 27. Samsung asks the court construe the claim as a whole to require that the delaying step occur after the generating step. The language of the claim supports this limitation in part because, as a matter of logic, at least one of the phased pulse signals must be generated before one of “said signals” could be delayed. Samsung goes further, however, and suggests that the phrase as a whole be construed to mean “receiving, after the generating step, a phased pulse signal and shifting the phase of the received signal backwards.” Samsung has failed to persuade the court that the additional limitations of “receiving” and “backwards shifting” are proper. Accordingly, the court rejects those additional limitations and construes this step to require that the delaying step occur after the generation of at least one of the phased pulse signals.

5. Frequency selector.

The parties dispute whether this term should be construed at all. Samsung argues the court should construe the term and contends that the proper definition is “a circuit that changes the frequency of an output during operation based on a received input.” Samsung points to the description, wherein the frequency selector generates a signal for setting the frequency of the PWM signal. Col. 4, ll. 59-61. Notwithstanding the description of the preferred embodiment, the court defines the term to mean “an instrumentality that changes the frequency of an output.”

6. Signal.

There are two phrases that use the term “signal.” The court agrees with O2 that the patent

uses the term signal according to its ordinary meaning. As such, the court defines the term “reference signal” to mean “a signal that provides a reference” and “frequency selection signal” to mean “a signal used to select a frequency.”

7. Phase array driver circuit.

The court incorporates by reference its construction of “array.” The balance of this phrase needs no construction.

8. Power regulating signal.

Samsung contends that “power regulating signal” means “a signal that adjusts power to a desired level based on feedback.” The dispute here is whether the power must be regulated based on feedback. Samsung argues that “regulating,” in the context of the patents, means control, and the specification describes a circuit that maintains control based on feedback. Samsung points to col. 8, l. 54-col. 9, l.9, which describes Figure 8 of the patent. O2 argues, however, that nothing in the specification mandates that the regulation be based exclusively on a feedback signal. The court agrees with O2 that Samsung is attempting to read in a feedback limitation from the preferred embodiment. The court construes this term to mean “a signal for controlling power to a load.”

9. LCD panel.

The court construes this term to mean “a panel of material whose reflectance or transmittance changes when an electrical field is applied to it.”

10. Indefiniteness argument.

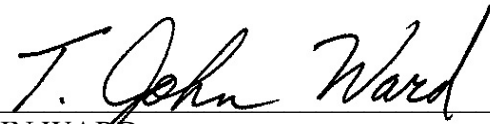
Samsung contends that claim 28 of the ‘234 patent is invalid as indefinite. That claim uses the phrase “regulating power to a plurality of loads using said plurality of phased burst signals, respectively.” Samsung contends that the claim is indefinite because it does not explain how the

respective loads are regulated. The court has reviewed the briefs, and the plaintiff has the better of this argument. The claim language uses the term “respectively” to refer to the fact that the respective phased burst signals control their corresponding loads. The claim language is amenable to construction to one of ordinary skill in the art, and Samsung’s indefiniteness argument is rejected.

4. Conclusion.

The court has construed the claim terms as set forth herein. To the extent Samsung argues for additional constructions or attempts to deviate from the court’s prior constructions, the court rejects those arguments and maintains the court’s previous rulings.

SIGNED this 28th day of June, 2006.

A handwritten signature in black ink, reading "T. John Ward", is written over a horizontal line.

T. JOHN WARD
UNITED STATES DISTRICT JUDGE